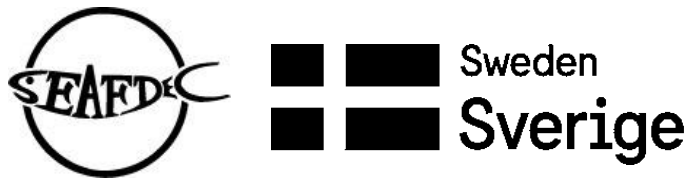


**REPORT OF THE TECHNICAL CONSULTATIVE MEETING ON DRAFTING OF
THE REGIONAL ACTION PLAN FOR MANAGEMENT OF TRANSBOUNDARY
SPECIES: INDO-PACIFIC MACKEREL (*Rastrelliger brachysoma*)
IN THE GULF OF THAILAND SUB-REGION**

**Chonburi Province, Thailand
12-13 September 2019**



**The Secretariat
Southeast Asian Fisheries Development Center**

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12-13 September 2019, Chonburi Province, Thailand

I. Introduction

1. The Technical Consultative Meeting on Drafting of the Regional Action Plan for Management of Transboundary Species: Indo-Pacific Mackerel (*Rastrelliger brachysoma*) in the Gulf of Thailand (GOT) Sub-Region was co-organized by the SEAFDEC-Sweden Project and the SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand (Fisheries *Refugia*) from 12 to 13 September 2019, in Chonburi Province, Thailand. The Meeting was meant to update on the progress of the implementation of the activities for Indo-Pacific mackerel in the Gulf of Thailand sub-region and draft the Regional Action Plan for management of Indo-Pacific mackerel and its habitats in the Gulf of Thailand sub-region.

2. The Meeting was attended by 39 participants (16 females, 23 males) from Cambodia, Indonesia, Malaysia, Philippines, Thailand and Viet Nam, officers from SEAFDEC Secretariat, Training Department (TD), Marine Fishery Resources Development and Management Department (MFRDMD), members of Regional Fisheries Policy Network (RFPN), and experts from Sweden and Burapha University of Thailand. The List of Participants is shown in **Annex 1**.

II. Opening of the Meeting

3. The Secretary-General of SEAFDEC, *Dr. Kom Silapajarn*, welcomed the participants and commended the cooperative effort between the SEAFDEC-Sweden Project and the SEAFDEC/UNEP/GEF Project on the Establishment and Operation of Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand (Fisheries *Refugia*) in jointly organizing the Meeting. He reiterated the importance of managing the Indo-Pacific mackerel (*R. brachysoma*) in the Southeast Asian region and the need for sub-regional cooperation to plan and carry out the appropriate management actions for the sustainable use of the species. He cited that several activities have been implemented by the SEAFDEC-Sweden Project that include training courses on stock assessment and fish larvae identification. He also highlighted the SEAFDEC-Sweden Project supported the conduct of DNA study of Indo-Pacific mackerel (*R. brachysoma*), which in the areas covering Cambodia, Malaysia, Thailand and Viet Nam and the findings of the study have been reported in 2018. He mentioned that the SEAFDEC/UNEP/GEF Project also conducted activities on *R. brachysoma* during the past years, in particular two fisheries *refugia* sites of Indo-Pacific mackerel were selected in Cambodia and Thailand. In this connection, the Meeting would thus provide the opportunity for assembling and synthesizing the findings and knowledge gained from these various studies. This knowledge can then be the scientific basis for the action plan to manage this species. Having shared these insights, he declared the Meeting open. The Opening Remarks is shown in **Annex 2**.

4. Following the Opening Remarks, the participants were requested to introduce themselves.

III. Background, Objectives of the Meeting and Adoption Agenda of the Meeting

5. *Ms. Saisunee Chaksuin*, the Gulf of Thailand Sub-Region Coordinator, introduced the background, objectives, expected outputs, and expected outcomes of the Meeting. She went over the Meeting agenda. The Prospectus appears as **Annex 3**.

6. The Agenda was adopted without amendment. It appears as **Annex 4**.

IV. Review the Progress on the Management of Transboundary Species: Indo-Pacific Mackerels for Gulf of Thailand Sub-region

4.1 SEAFDEC-Sweden Project

7. *Dr. Worawit Wanchana*, Policy and Program Coordinator of SEAFDEC, presented the progress of the activities implemented in relation to transboundary species in GOT sub-region, specifically the Indo-Pacific mackerel. He informed the Meeting that the SEAFDEC-Sweden Project has conducted several bilateral and sub-regional consultations which resulted in the countries agreeing to focus on the study status and trend of Indo-Pacific mackerel and to formulate a policy framework to support long-term fisheries management. Based on the discussions, the SEAFDEC-Sweden project supported the DNA study of Indo-Pacific mackerel for GOT sub-region. Its purposes were to understand its stock structure, identify its spawning area, and understand its migration pattern and life cycle.

8. He presented the findings of the DNA study of *R. brachysoma* around the GOT Sub-region. (The tissues of *R. brachysoma* were collected from Cambodia, Malaysia, Thailand and Viet Nam). The results showed that *R. brachysoma* is mixed-stock in the sub-region; it can be assumed that the Indo-Pacific mackerel is a transboundary species. Therefore, it was encouraged for countries to develop a joint management plan that comprises Monitor, Control and Surveillance (MCS) Network Coordination and national management measures for transboundary species.

9. He highlighted that the already available information can be used for future joint actions plan development to establish agreements for coordinating national fisheries management measures. He noted that SEAFDEC will continue to improve data collection on AIB species, using existing Standard Operating Procedures (SOP), and monitoring changes in catch and landing. His presentation is shown in **Annex 5**.

10. In addition, *Ms. Praulai Nootmorn*, representative from Thailand provided information of catch data of Indo-Pacific mackerel, showed the decline of catch in Thailand in 2017.

4.2 SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand (Fisheries *Refugia*)

11. *Dr. Somboon Siriraksophon*, Project Director of the SEAFDEC/UNEP/GEF Fisheries *Refugia* Project reviewed the progress of the Project. Currently there are 15 selected fisheries

refugia sites in seven (7) countries; it is expected that at the end of the project there shall have been 170,000 hectares of *refugia* to protect the larvae, spawning areas, as well as the critical habitats and the life cycle of the species. The project mechanism comprises national level and regional level components, which are helpful in ensuring effective implementation of the project. His representation appears as **Annex 6**.

V. Review on the Existing Scientific Knowledge of Indo-Pacific Mackerel

5.1 Oceanography in the Gulf of Thailand

12. The Assistant Professor from Burapha University of Thailand, *Dr. Anukul Buranapratheprat* presented on the observation of water column condition, seasonal variation, thermocline in the GOT by SEAFDEC in 2014. He focused on the results of the study for water circulation and Indo-Pacific mackerel distribution seasonally, life cycle of mackerel and population measurement. His presentation appears in **Annex 7**.

13. The representative from Thailand commented that data collection system gathered by SEAFDEC was very good. She mentioned that the water circulation and oceanographic system are quite useful particularly results in salinity and dissolved oxygen. She also inquired the occurrence of double thermocline in center part of Gulf of Thailand. In response, *Dr. Anukul* clarified that more apparent thermocline occurred in summer time due to strong heat and event of water circulation.

14. The representative from Indonesia commented that the presentation on the circulation of the Indo-Pacific mackerel should also consider the acidity, as it may restrain the vertical movement of the current. In view of this, the *Dr. Anukul* explained that the similarity of this condition to hypoxia condition which may reflect the waters and trigger a vertical movement. He also suggested that these kinds of studies should be considered more under a species study.

5.2 Stock/Population, Mapping and Habitat Linkages, Fisheries Status and Legal Measures

15. *Dr. Somboon* provided a summary of current scientific knowledge on the Indo-Pacific mackerel (*R. brachysoma*) based on the inputs from countries (**Annex 8**)

VI. Discussion on the Draft of the Gulf of Thailand sub-regional Action Plan for Fisheries Management of Indo-Pacific mackerel

16. *Dr. Somboon* explained the Meeting on the steps for drafting the Region Action Plan, which specified the steps, as follows: 1) Review knowledge gaps/issues; 2) Propose the actions; 3) Identify the objectives; 4) Identify the outcomes and goal; and 5) Develop the Roadmap. After his explanation, the participants were divided into two groups for brainstorming session.

17. Based on the discussion, the Meeting agreed on the framework of the draft Regional Action Plan (RAP) comprises five (5) dimensions, namely: 1) Ecosystem; 2) Social; 3) Economic; 4) Governance; and 5) Climate Change. The groups discussed the knowledge gaps and issues, actions, the overall objective and specific objectives of each Dimension. In

addition, the participants were requested to also identify the responsible institution/s for each action as well as identify the Outcomes and Goal of the Action Plan.

VII. Plenary Discussion on the finalization of the Draft RAP of the Gulf of Thailand Sub-regional Action Plan for Fisheries Management of Indo-Pacific mackerel

18. *Dr. Somboon* presented the results of the group discussions in a plenary session. The Meeting agreed on the proposed main goal and outcomes for the regional plan of action of Indo-Pacific mackerel management in the Gulf of Thailand sub-region. It is intended as a guide in the sub-region for managing the Indo-Pacific mackerel. The draft RAP of Indo-Pacific mackerel management in the Gulf of Thailand sub-region appears as **Annex 9**.

VIII. Conclusion and Ways forward

19. The Meeting agreed that the RAP should be holistic management approach on the Indo-Pacific mackerel in the Gulf of Thailand. The Meeting also took note that the RAP could be used as a template for the formulation of management plans of other species in other countries.

20. *Ms. Pattaratjit Kaewnuratchadasorn* informed the Meeting of the next steps/road map upon the draft RAP finalized. She informed that the results of the Meeting will be presented at the 42nd Meeting of SEAFDEC Program Committee to be held in November 2019 and to be reported to the 52nd Meeting of SEAFDEC Council in 2020, and subsequently incorporated into the ASEAN mechanism if appropriate. The roadmap is shown in **Annex 10**.

IX. Closing of the Meeting

21. On behalf of *Dr. Kom Silapajarn*, SEAFDEC Secretary-General, the Policy and Program Coordinator of SEAFDEC Secretariat, *Dr. Worawit Wanchana* expressed his gratitude to the participants for their contributions to the deliberations during the two-day Meeting. He hoped that action plans for other fishery resources in the region will also be developed. He thanked everyone for their active participation. He then declared the Meeting closed.

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Annex 2

OPENING REMARKS

*By Dr. Kom Silapajarn,
SEAFDEC Secretary-General*

Distinguished delegates from Cambodia, Indonesia, Malaysia, Philippines, Thailand and Viet Nam,
My colleagues from SEAFDEC
Ladies and Gentlemen,
Good morning!

It is a great honor for me to be here with you and welcome you to the two-days “Technical Consultative Meeting on Drafting of the Regional Action Plan for Management of Transboundary Species: Indo-Pacific Mackerel (*Rastrelliger brachysoma*) in the Gulf of Thailand Sub-region”, which is jointly organized by SEAFDEC-Sweden Project and SEAFDEC/UNEP/GEF/Fisheries Refugia Project.

I believe that every know this species, Indo-Pacific mackerel or short mackerel or in scientific name called *Rastrelliger brachysoma* is one of most important commercially pelagic species found in the Southeast Asian region, covers the Gulf of Thailand includes Philippines and Indonesia. Over the years, you may have heard through media revealing the disappearance of this Indo-Pacific mackerel or the reduction of catch. In general, Indo-pacific mackerels are caught by various types of fishing gears in the GoT, with the major fishing gear was purse seine recorded the catch was caught 45% in 2008. However, the landings showed declining trends indicating that the mackerel stocks in the South China Sea and GoT are already overexploited.

Indo-pacific mackerels have been monitoring by countries and made effort to understand the stock status. Obviously, many countries have paid seriously attention to find the appropriate management measures, with the aim for the sustainable use of pelagic species.

Ladies and gentlemen,

Through the regional and sub-regional effort, the SEAFDEC-Sweden Project has been highlighted on the management of transboundary species that includes Indo-pacific mackerels at many consultative meetings both bi-lateral level and the Gulf of Thailand Sub-region. Several activities were also undertaken under the SEAFDEC-Sweden Project such as training courses on stock assessment, fish larvae identification, especially identify to Genus and Species level of Scombridae Family. In 2018, the Project supported the conduct of DNA study in Cambodia, Malaysia, Thailand and Viet Nam, where the results was revealed in the Technical Meeting on Management of Transboundary Species: Indo-Pacific Mackerel, which was held in December 2018.

Furthermore, the SEAFDEC/UNEP/GEF Project on Establishment and Operation of Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand, the transboundary areas for Indo-Pacific mackerel has been addressed particularly in the border between Thailand and Cambodia, and Cambodia and Viet Nam. The best practices and action plan for management of this Transboundary species needed to be further discussed to ensure that the Indo-Pacific mackerel are sustainable harvested

Since good progresses have been made so far by both projects and other organizations, it is opportune time to look at the concrete results and make the steps to take further, as it is urgent needed for the countries to prepare and do appropriate actions. Therefore, this Meeting is being organized jointly by the SEAFDEC-Sweden Project and Fisheries *Refugia* Project, and brings your expertise and valuable contributions as well as those inputs from the 2018 Technical Meeting and other technical

inputs, to discuss and develop the regional action plan or roadmap for national and regional level to be carry further for fisheries management of Indo-Pacific mackerel in the Gulf of Thailand sub-region.

Ladies and gentlemen, I would like to inform you that this is the last year of the SEAFDEC-Sweden Project and it would also perhaps the last technical event of the Project. This is my last meeting to join you all here in the capacity of Sec-Gen of SEAFDEC too. I wish to express our deepest appreciation to the government of Sweden for providing the financial support to our Region, enabling SEAFDEC to support ASEAN Member States to carry out the several activities for all these years to achieve the UN Sustainable Development Goals.

I also would like to extend my sincere gratitude to the UNEP/GEF for the fund to implement the activities under the Fisheries *Refugia* Project and bring us all join here this joint effort to manage transboundary resources.

My big thanks to colleague from ASEAN countries for your support during my term of service I have learned a lot from you and without your close collaboration and constant hard working, many activities would not be accomplished.

Last but not least, on behalf of SEAFDEC, I hope this Meeting will result in success. Once again, I welcome all of you to Thailand and hope that you have a nice stay in Chonburi province. Lastly, it is an opportune time for me to declare the meeting open.

Thank you very much.

Annex 3

PROSPECTUS

I. Background

Mackerels (Family Scombridae) particularly the Indo-Pacific mackerel also known as short mackerel (*Rastrelliger brachysoma*) are the most economically important small pelagic fishes in the Southeast Asian region contributing about 38% to the small pelagic fisheries production or 11% to the total capture fisheries production in 2010. Indonesia is the major contributor to the region's total mackerel production, the highest catch of mackerels was recorded in 2012 was at 3,757,030 metric tons (SEAFDEC, 2014).

The Gulf of Thailand Sub-region is one of the important fishing ground for Indo-Pacific mackerel where the peak highest catch of mackerel in the Gulf of Thailand (GoT) area caught by purse seine and falling net was in 1996 at 328,955 MT while the lowest catch had 3 peaks, in 1999, 2005 and 2010 at 289,285 MT, 283,984 MT and 259,354.56 MT, respectively that never reached 300,000 MT as recorded in 1996.

In general, Indo-Pacific mackerels are caught by various types of fishing gears in the GoT and the three major types recorded in 2008 are purse seines (45%), driftnets (31%), trawls (18%) and others (6%). The landings show declining trends indicating that the mackerel stocks in the South China Sea and GoT are already overexploited. For species composition of purse seine catch, Indian mackerels made up about 25% of the total catch while short mackerels account for only 2% (SEAFDEC, 2017).

The study conducted by Bidin and Kassim (2007) estimated that the average exploitation rates (E) for *R. kanagurta* is at 0.69 from 2002 to 2006 in four countries bordering the South China Sea. This higher E value was also recorded for *R. brachysoma* in a study done in Malaysia and Philippines with average exploitation rate of 0.66. It could be concluded that the mackerel resources in the South China Sea during the study period are already overexploited.

With the support from the SEAFDEC-Sweden project, the issues of stock status and transboundary areas of Indo-Pacific mackerel has been addressed at many consultative meetings under the bi-lateral dialogues between Thailand and Cambodia, Cambodia and Viet Nam, Thailand and Malaysia. In addition, at the Gulf of Thailand Sub-region, the member countries of the GoT namely Cambodia, Malaysia, Thailand and Viet Nam agreed to focus in the management of transboundary species especially Indo-Pacific mackerel. Technical support on data collections and scientific research such as DNA study and analysis in collaboration with Research Institutes and University in Thailand have been facilitated since 2018 to identify stock structure of Indo-Pacific mackerel and to support the information for management policy at national and sub-regional levels.

Under the SEAFDEC/UNEP/GEF Project on Establishment and Operation of Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand (Fishery *Refugia*), the transboundary areas for Indo-Pacific mackerel has been addressed particularly in the border between Thailand and Cambodia, and Cambodia and Viet Nam. The best practices and action plan for management of this transboundary species needed to be further discussed to ensure that the Indo-Pacific mackerel are sustainable harvested.

Taking into accounts, the results from the Experts Group Meeting in December 2018 suggested to follow up and actions at national and regional level included carry out research necessary on Indo-Pacific mackerel, monitoring (data collection), and control (specific measure and legislation) as well as linkage to Fisheries *Refugia* project requirements, SEAFDEC proposes the Technical Consultation Meeting for Drafting the Regional Action Plan* for Fisheries Management of Indo-Pacific mackerel in the GoT Sub-region. The Meeting hosts by SEAFDEC Sweden project in collaboration with the Fisheries *Refugia* project.

II. Objectives

1. To provide updates on the progress implementation of the management of transboundary Species: Indo-Pacific Mackerels for Gulf of Thailand Sub-region.
2. To discuss and finalize the draft the Regional Action Plan for fisheries management of Indo-Pacific mackerel and its habitat in the Gulf of Thailand sub-region.

III. Expected Outputs

Regional Action Plan for fisheries management of Indo-Pacific mackerel and its habitat in the Gulf of Thailand sub-region

IV. Expected Outcomes

Regional and Sub-regional countries implemented the actions on the Indo-Pacific mackerel management beneficial to sustainability of fisheries resource and healthy of habitats as well as well-being of communities.

V. Meeting Date and Venue

The Technical Consultative Meeting on Drafting of the Regional Action Plan for Management of Transboundary Species: Indo-Pacific Mackerel in the Gulf of Thailand Sub-region will be held on 12-13 September 2019, Chonburi province, Thailand.

VI. Expected Participants

1. Representatives from ASEAN Member States namely: Cambodia Malaysia, Thailand and Viet Nam, Indonesia, Philippines
 - 1.1 SEAFDEC-Sweden Project funded:
 - SEAFDEC-Sweden Project Focal Point or SEAFDEC National Focal point for the Gulf of Thailand Sub-region
 - One representative form senior official/fishery biologists who is responsible for data collection, monitoring and assessment of transboundary species stock focus on Indo-Pacific mackerel
 - 1.2 SEAFDEC/UNEP/GEF Fisheries *Refugia* Project
 - Two (2) Fisheries *Refugia* Project Focal Points
2. Resource persons from research/academic institutes
3. Resource persons from SEAFDEC/UNEP/GEF Fisheries *Refugia* Project, and FAO/RAP
4. Representatives from SEAFDEC Secretariat, SEAFDEC/TD, MFRDMD, and relevant organizations
5. Seven (7) members of Regional Fisheries Policy Network (RFPN)

* Regional Action Plan (RAP) for Management of Indo-Pacific Mackerel is meant to serve as a foundational document, of a non-legally binding nature, that identifies practices and processes to support implementation of the ASEAN-SEAFDEC Resolution among the country in the GoT Sub-region. It marks an evolutionary step towards a concerted regional approach to supporting countries in their efforts to manage transboundary fish stock.

Annex 4

TIME TABLE AND AGENDA

Time	Contents
12 SEPTEMBER 2019	
08.30-09.00	Registration
09.00-09.15	Agenda 1: Opening of the Meeting <i>by SEAFDEC Secretary-General</i>
09.15-09.30	Agenda 2: Background, Objectives of the Meeting and Adoption Agenda of the Meeting <i>by SEAFDEC-Sweden project</i>
09.30-10.30	Agenda 3: Review the Progress on the Management of Transboundary Species: Indo-Pacific Mackerels for Gulf of Thailand Sub-region - SEAFDEC-Sweden Project - SEAFDEC/UNEP/GEF Fisheries <i>Refugia</i> Project
10.30-11.00	<i>Coffee break and group photo</i>
11.00-12.00	Agenda 4: Review on Existing Scientific Knowledge of Indo-Pacific Mackerel 4.1 <i>Stock/population, Mapping and Habitat Linkages, Fisheries Status and Existing legal/measures</i> <i>By SEAFDEC/UNEP/GEF Fisheries Refugia Project</i> 4.2 <i>Oceanography in the Gulf of Thailand</i> <i>By Dr.AnukulBuranapratheprat, Burapha University</i>
12.00-13.30	<i>Lunch</i>
13.30-15.00	Agenda 5: Discussion on the Draft of the Gulf of Thailand sub-regional Action Plan for fisheries management of Indo-Pacific mackerel <i>Annotated agenda: Participants will discuss on the knowledge gaps and issues, regional scientific questions or R&D priorities. Expected participants will be scientific group & policy makers</i>
15.00-15.30	<i>Coffee break</i>
15.30-17:00	Agenda 5: Discussion/Group work (continued) <i>(Plans to address these science questions/priorities)</i>
18.00-20.00	<i>Reception Dinner hosted by SEAFDEC-Sweden</i>
13 SEPTEMBER 2019	
09.00-10.30	Agenda 6: Plenary Discussion on the finalization of the Draft RAP of the Gulf of Thailand sub-regional Action Plan for fisheries management of Indo-Pacific mackerel
10.30-11.00	<i>Coffee break</i>
11.00-12.00	Agenda 6: Plenary discussion on the finalize the Draft RAP (Continued)
12.00-13.30	<i>Lunch</i>
13.30-15.00	Agenda 6: Plenary discussion on the finalize the Draft RAP (Continued)
15.00-15.30	<i>Coffee break</i>
15.30-16.00	Agenda 7: Conclusion and Ways forward
16.00-16.15	Agenda 8: Closing of the Meeting


REVIEW THE PROGRESS ON THE MANAGEMENT OF TRANSBOUNDARY SPECIES: INDO-PACIFIC MACKERELS FOR GULF OF THAILAND SUB-REGION (SEAFDEC-SWEDEN PROJECT)

By Dr. Worawit Wanchana


Progress of the Sub-regional Activities
Implementation in GoT Countries: Indo-Pacific
Mackerel
SEAFDEC-Sweden Project

Outline

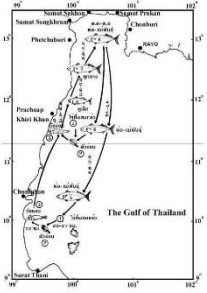
- Activities implemented in GoT sub-region and major findings
- Plan for joint/collaborative management of Indo-Pacific Mackerel resources in the GoT sub-region



Shared stock ?

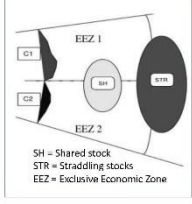


Rastrelliger brachysoma
(Platoo)



Shared Stocks ?


- **Transboundary stocks:** fish resources crossing the EEZ boundary of one coastal State into the EEZ (s) of one, or more, other coastal States
- **Highly migratory species:** the resources to be found both in coastal State EEZ and the adjacent high seas, consisting of the major tuna species
- **Straddling stocks:** all other species to be found both within the coastal State EEZ and the adjacent high seas
- **Discrete high seas fish stocks:** fish stocks to be found exclusively in the high seas



Ref: FAO Code of Conduct for Responsible Fisheries, Article 7 (FAO, 2003b)

Activities in GoT Sub-region

A series of bilateral and sub-regional initiatives/activities (research, consultation for information gathering and discussion, capacity building programs, etc.) in collaboration with GoT (CMTV) countries



Rastrelliger brachysoma
(Platoo)


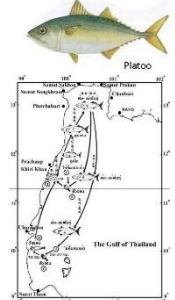
- Information gathering
- Status and trend: information gathering based on existing data
- DNA study on stock structure (research activities in CTV countries)

Gulf of Thailand Sub-regional Initiatives on Transboundary Fish Stocks

- Platoo was prioritized as economical important species for the GoT countries (Cambodia, Malaysia, Thailand, and Viet Nam)
- At the 5th Meeting of the GoT in 2015, SEAFDEC was suggested to:
 - Encourage GoT countries to formulate policies by including data collection activities in the national policy frameworks to support long-term fisheries management
 - Conduct sub-regional activities for better understand stock status and migratory pattern of Platoo which will be used as a basis for establishing agreements on coordinated national measures for transboundary stock.

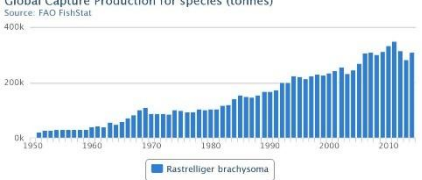

Information Gathering

- Scientific name: *Rastrelliger brachysoma*
- Common name: short mackerel, Indo-Pacific mackerel
- Habitat: shallow waters of Southeast Asia
- Fishing gear: gillnet, purse seine, trawl

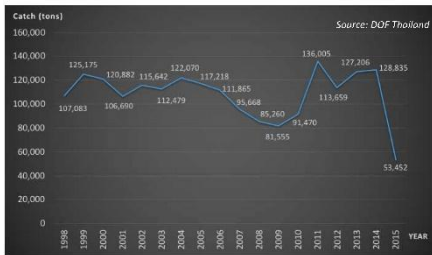



Global Capture Production for species (tonnes)

Source: FAO FishStat

Landing of Platoo 1998-2015



Sub-regional Initiatives for Transboundary Fish Stocks in GoT

- Expert Group Meeting on Stock Status and Geographical Distribution of AIB Species in the GoT, Sep. 2016
- Technical Meeting on Planning for Development of Stock Study for AIB Species in the GoT, Feb. 2017
- Stock Study on Indo-Pacific Mackerel in GoT since late 2017
- Workshop on results from DNA study for IPM in GoT, Dec. 2018



Stock Status (2017)

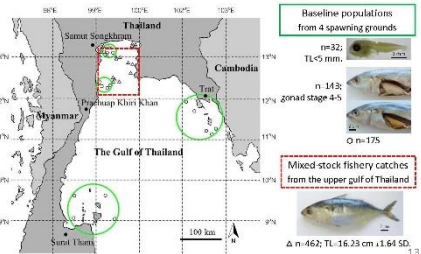
Species	Status		
	Decreasing	Stable	Increasing
Anchovy	Viet Nam	Thailand	Malaysia
Indo-Pacific Mackerel		Malaysia Thailand	
Blue swimming crab	Thailand Viet Nam		



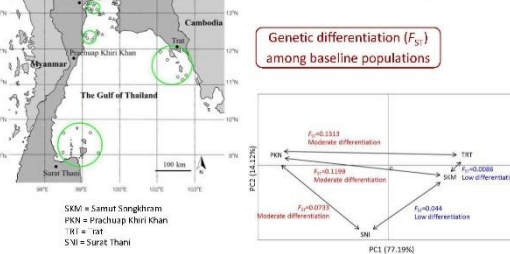
DNA study on stock structure

- Population structure and genetic mixed-stock analysis (MSA) of short mackerel (*Rastrelliger brachysoma*)
- Identify major population contributing to fishery catches in the upper Gulf of Thailand

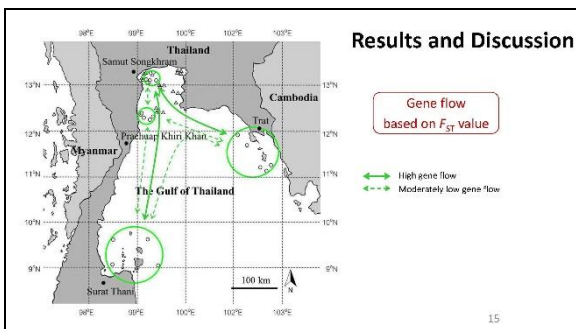
Materials and Methods



Results and Discussion

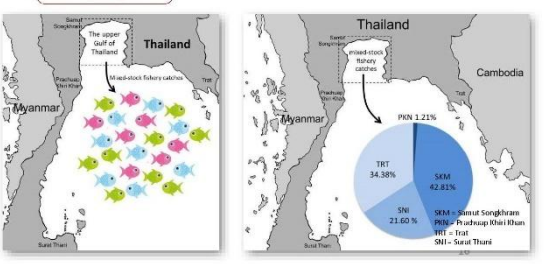


Results and Discussion



Mixed-Stock Analysis (MSA)

Results and Discussion



Conclusion of MSA Study for Indo-Pacific Mackerel in GoT (Thai Waters)

- Four populations are identified according to their spawning grounds.
- Samut Songkhram population is the major contributor to fishery catches in the upper gulf of Thailand.
- Trat and Surat Thani populations are the second and third large contributors and also provide gene flow to Samut Songkhram population.
- Prachuap Khiri Khan population is the smallest contributor and has low gene flow to others.
- These information is envision to assist sustainable fishery management in the upper gulf of Thailand.

17

Sample collection

Baseline populations

Locations	o	n	N
Trat	59	30	89
Samut Songkhram	43	4	47
Prachuap Khiri Khan	59	30	89
Surat Thani	14	16	30
Pattani	21	21	48
Cambodia	-	50	50
Vietnam	-	50	50
Malaysia	-	33	33
	202	234	436

o - old samples (DOF project)
n - new samples (SEAFOC project)

18

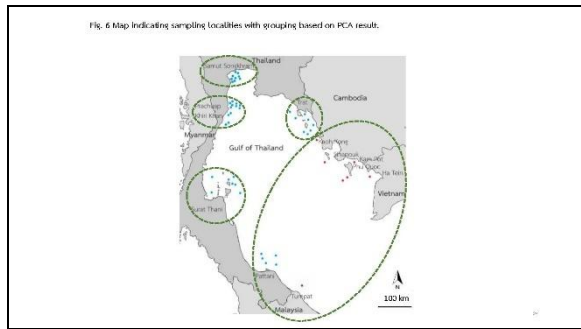
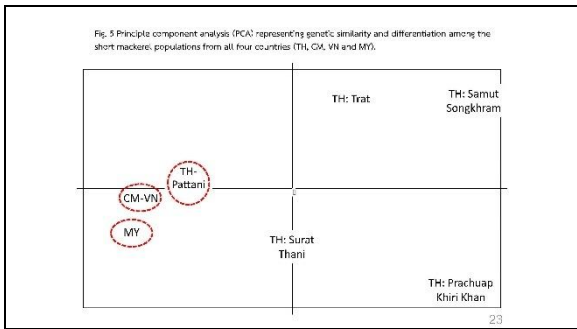
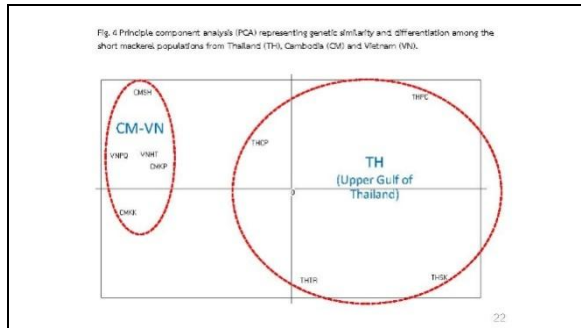
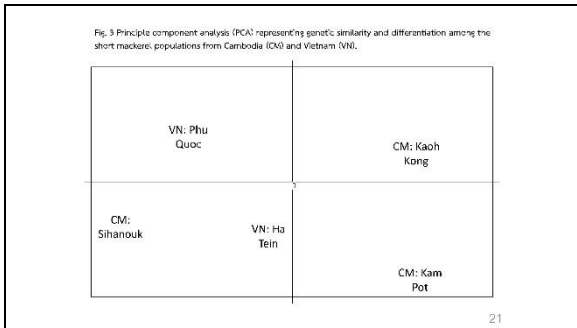
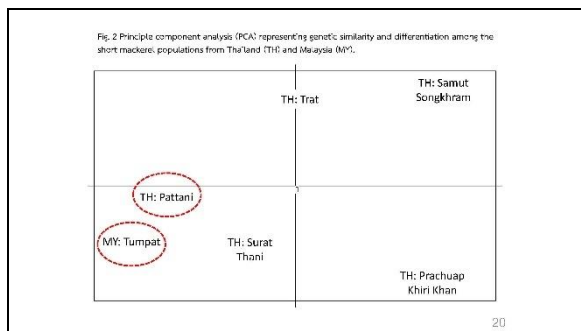
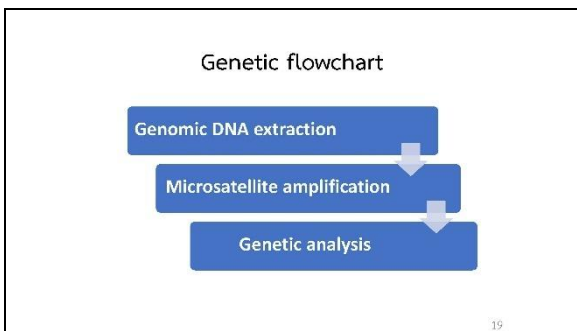
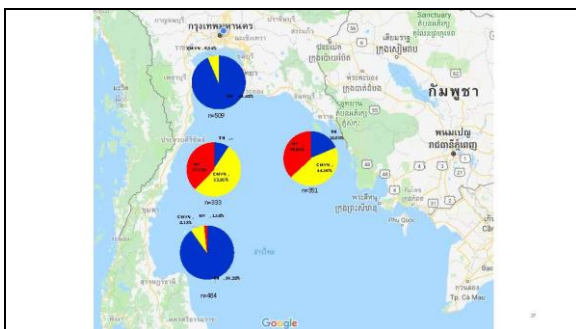
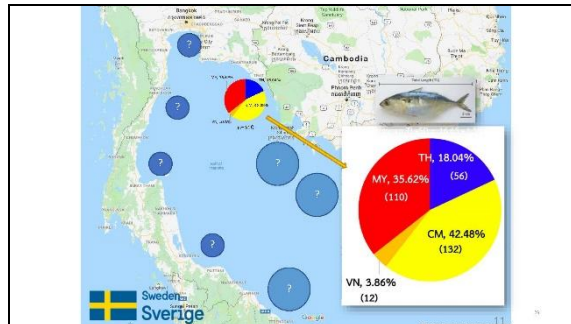
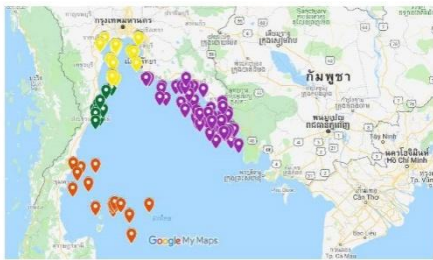


Fig. 7 Map of the Gulf of Thailand represents catching sites of the short mackerel (DOF samples) year 2014; n=1677; mean TL±SD = 16.97±1.33 cm) used for mixed-stock analysis (MSA). The area covered Lat: 09° 11' to 13° 21' N Long: 99° 24' E to 102° 58'.



Joint Management Plan

Possible Areas of Cooperation in GoT countries on Platoon Management

- National management measures for transboundary species to be developed and agreed upon the results from the sub-regional collaborative research/activities
- MCS Network Establishment: agree and implement workplan of activities

Plans, Methodologies, Outputs, and Outcomes...

Activities	Outputs	Outcomes
Short-term plan		
1. Conduct Genetic Mixed-Stock Analysis (2018, completed)		
Step 1: Identify major fishing ground information by countries	Inputs for designing the genetic study on AIB species	Fishing ground mapping for AIB species in GoT
Step 2: Conduct baseline population studies	Determination of number of AIB stocks in GoT	National and joint management plans for AIB species in GoT
Step 3: Conduct MSA	Determination of amount of contribution from other stocks in particular to area of study	National and joint management plans for AIB species in GoT

Plans, Methodologies, Outputs, and Outcomes...

Activities	Outputs	Outcomes
Short-term plan (continued)		
2. Improved Data Collection on AIB Species Using Existing SOP		
Step 1: Name the enumerators for each landing site and study area	Enumerator designated for landing sites in study areas	Harmonized regional data in GoT countries
Step 2: Train the designated enumerators	Enhanced knowledge on biological and environmental data	Improve capacity of enumerators from GoT countries for being trainers in the future
Step 3: Data collection and analysis	Updated information and data on biological and environmental aspects	National and sub-regional management plans for AIB species in GoT
Step 4: Convene meeting to discuss and validate data	Validated data for understanding stocks of AIB species in GoT	National and sub-regional management plans for AIB species in GoT

Plans, Methodologies, Outputs, and Outcomes...

Activities	Outputs	Outcomes
Medium and long-term plan		
1. Monitoring change in catch and landing		
Periodic catch and landing survey (depending on the countries)	Updated information on stock status/condition	Effectiveness of the management plans
2. Discussion on development of a joint/collaborative plan/actions		
GoT meeting (s)		

Level of the Development for Joint Management Plans for the Shared Stocks

- **Primary Level:** cooperation on research program/activity
- **Secondary Level:** the establishment of agreements of coordinated national fisheries management measures



Conclusion

- A set of information can be used for future joint actions plan development
- Technical capacities (together with SOP, etc.) are already in place
- GoT initiatives on IPB in primary level → development of the joint/collaborative actions/management plan ?
- Future action (s) ?

REVIEW THE PROGRESS ON THE MANAGEMENT OF TRANSBOUNDARY SPECIES: INDO-PACIFIC MACKERELS FOR GULF OF THAILAND SUB-REGION (SEAFDEC/UNEP/GEF/FISHERIES REFUGIA PROJECT)

By Dr. Somboon Siriraksophon

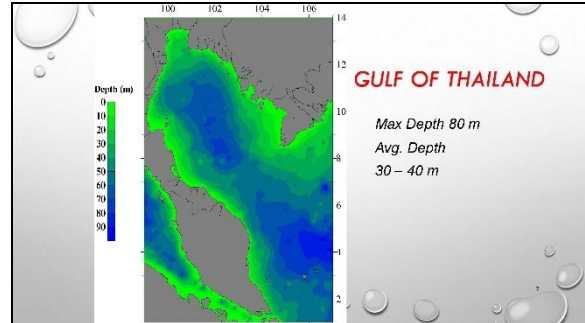
Annex 7

REVIEW ON THE EXISTING SCIENTIFIC KNOWLEDGE OF INDO-PACIFIC MACKEREL (OCEANOGRAPHY IN THE GULF OF THAILAND)

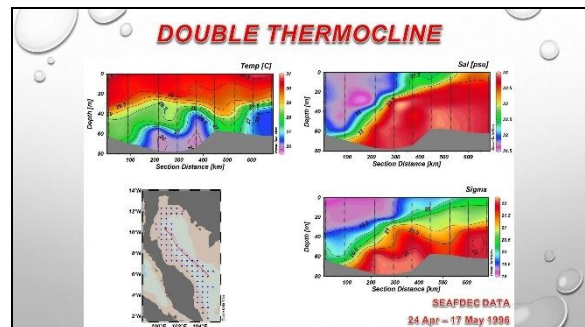
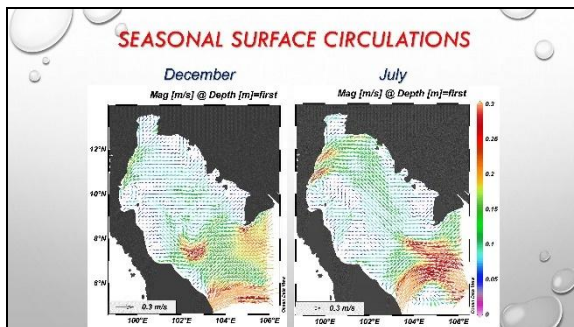
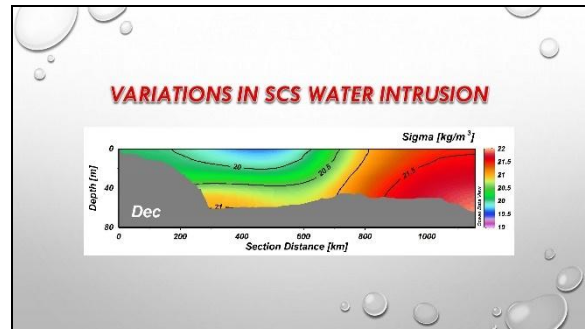
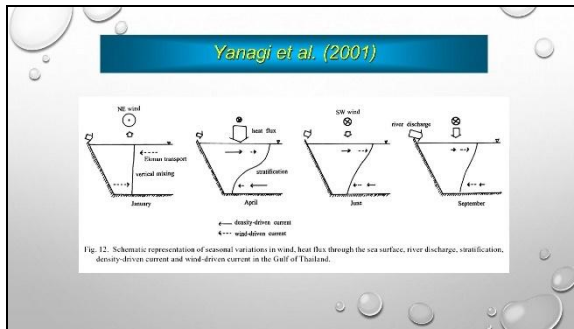
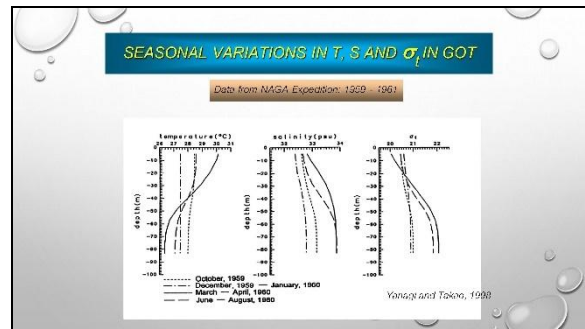
By Dr. Anukul Buranapratheprat

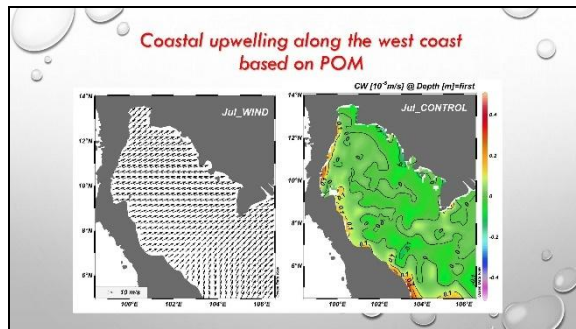
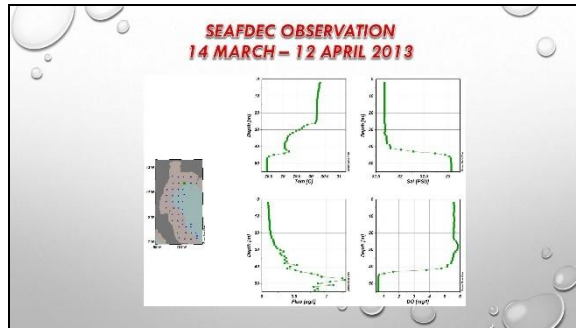
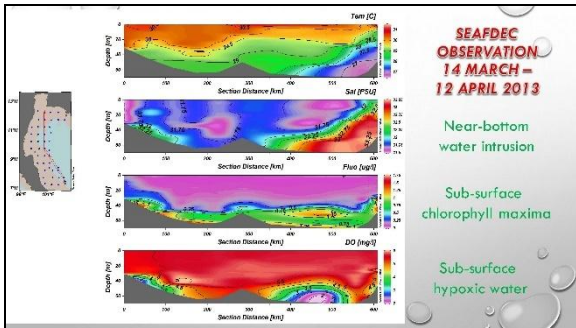
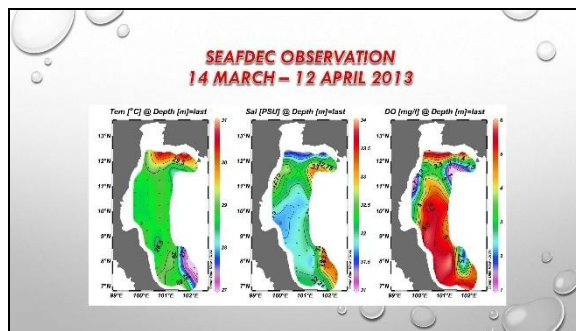
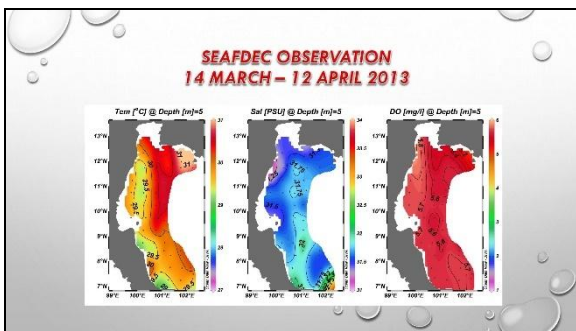
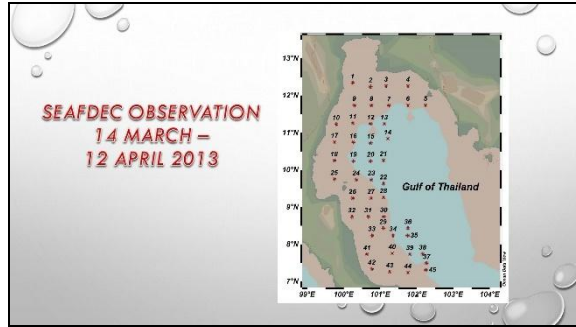
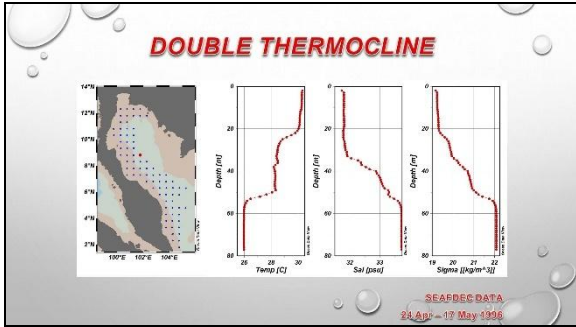
Oceanographic Conditions and Fishery resources in the Gulf of Thailand

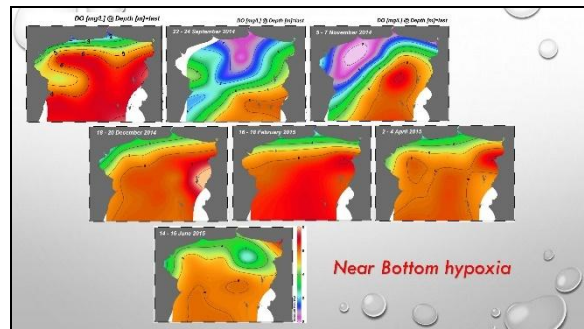
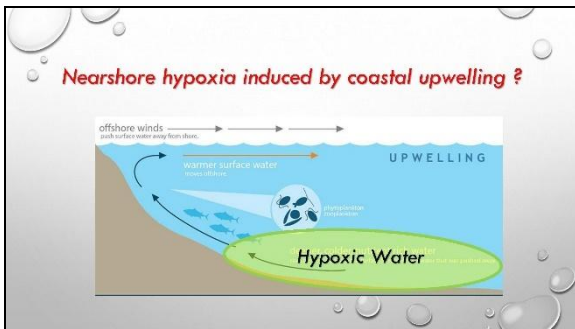
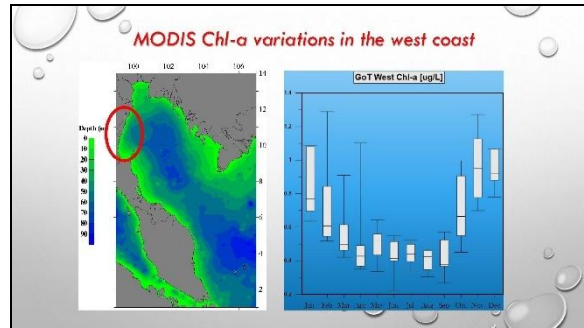
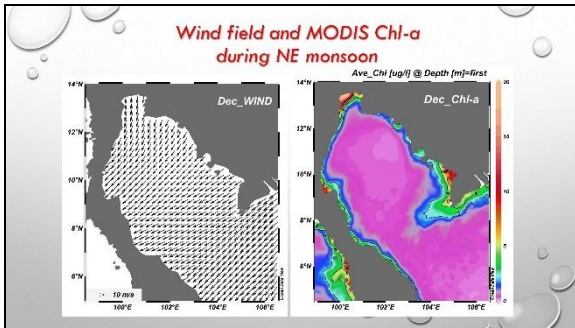
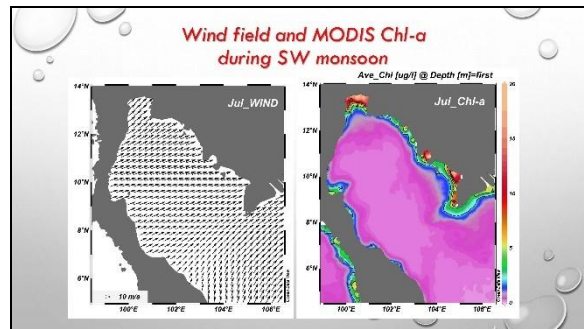
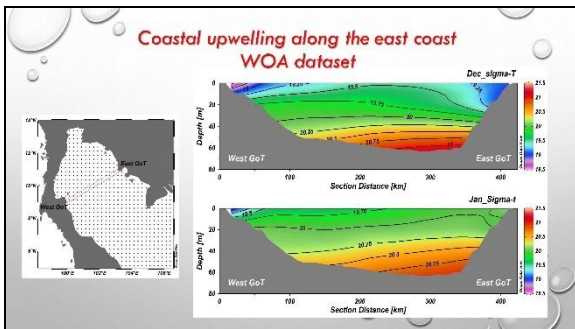
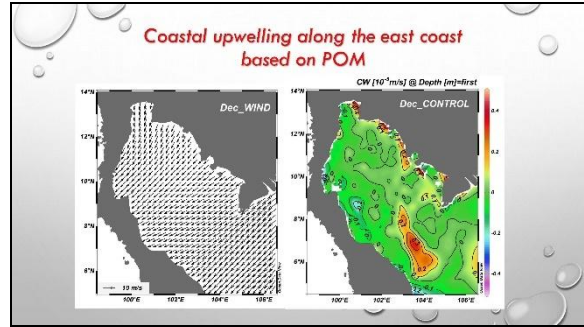
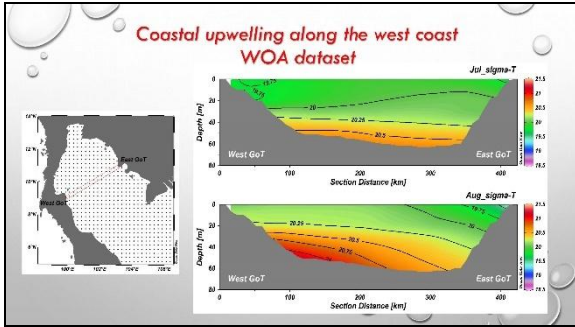
Anukul Buranapratheprat¹ and Prulai Nootmorn²
¹Burapha University
²Department of fisheries

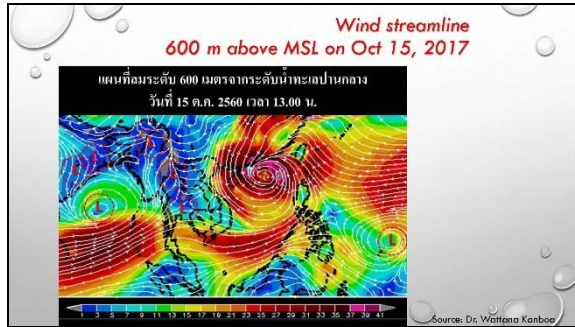
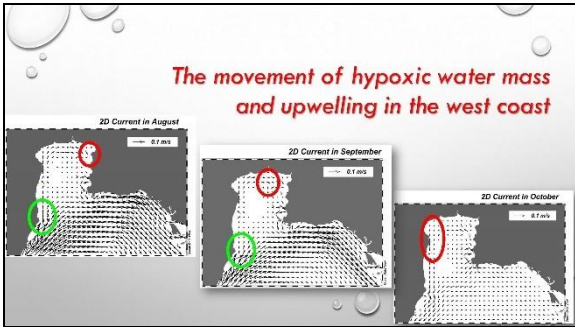


WATER COLUMN CONDITIONS IN GOT









CIRCULATION AND SHORT MACKEREL DISTRIBUTION¹

¹The survey results from Department of Fisheries



- WHAT CONTROL THE DISTRIBUTION OF MACKEREL IN GOT?**
- The spawning grounds: More than one? Where?
 - Do we understand the life cycle clearly?
 - Do they distribute or migrate with water circulation?
 - Are oceanographic conditions important? Water column conditions? Upwelling?

THANK YOU

REVIEW ON THE EXISTING SCIENTIFIC KNOWLEDGE OF INDO-PACIFIC MACKEREL (STOCK/POPULATION, MAPPING AND HABITAT LINKAGES, FISHERIES STATUS AND LEGAL MEASURES)

By *Dr.Somboon Siriraksophon*

I. INTRODUCTION

This paper is developed based on the inputs from 6 relevant countries on the transboundary species of *Rastrelliger brachysoma* in the Gulf of Thailand and the South China sea sub-region. The objective of this paper is to provide the existing scientific and local knowledge and information to manager for consideration and decision on the development of the Regional Action Plan for management of this transboundary species in the sub-regions.

II. GENERAL INFORMATION AND CHARACTERISTICS

The Short Mackerel is a species of mackerel in the family Scombridae. It is known by some other names such as Short bodied Mackerel, Maquereau Trapu (French), Caballa Rechoncha (Spanish), *Rastrelliger brachysoma* (scientific name) and Pla thu (Thai). It is mainly found in the shallow waters of Southeast Asia and Melanesia. And the fish is of major importance in the fisheries industry. This species is pelagic and oceanodromous and is found in estuarine habitats with slightly reduced salinities and in areas where surface temperature range between 20–30°C. It forms schools of equally sized individuals, and feeds chiefly on microzooplankton with a high phytoplankton component.

Catches of the Short Mackerel are generally either recorded as *Rastrelliger spp.* or combined with *R. kanagurta*. This fish species is the most important commercial species of mackerel in the Philippines. It is caught throughout the year with native purse seines and fish corrals in Manila Bay. In addition, this species is also importance in Thailand, Cambodia, Indonesia, Malaysia and Viet Nam.



The Short Mackerel is generally sold at market at low prices. But it is a very good source of protein. And it is popular as food in it's native area.

Conservation Status

The Short Mackerel has a very deep body. It is generally of silver color, with somewhat pointed snout. Their dorsal fin is yellowish with black edge, the pectoral and pelvic fins are dusky and other fins are yellowish.



Their head is about equal to or less than their body depth. Average body length of the Short Mackerel is around 20 cm, with a maximum length of 34.5 cm. Length at 50% maturity ranges from 15–18 cm fork length (FL) (Sudjastani 1974, Isa 1986, Pairoh 1987), and has an estimated longevity of at least two years (Tandog-Edralin 1988, Isa 1986, Pairoh 1987).

III. STOCK/POPULATION

CAMBODIA:

In 2018, the total catch of mackerels is 2,984 ton in Cambodia. There are four stocks of *R. brachysoma* in the Gulf of Thailand, i.e. Eastern, Upper, Central and Lower stocks. The genetic analysis results focused in the Trat province in Thailand where border to Cambodia showed that *R. brachysoma* harvested off Trat province consisted of 42.48% from Cambodia, 35.63% from Malaysia and 3.86% from Viet Nam, and 18% from Thai waters.

INDONESIA:

Based on Marine Affairs and Fisheries Ministerial Decree No. 50 Year 2017, there is an estimation stock potency for small pelagic fish (does not specifically mentioned for *R. brachysoma*) in Malacca Strait and Andaman Sea (those waters are grouped in Fisheries Management Zone [FMZ] 572) as amount as 99.865 tons with allowable catch 79.892 tons, and utilization rate 0.83 (categorized as fully-exploited). Suman *et al*, 2018, in Jurnal Kebijakan Perikanan Indonesia, mentioned that the fish stock for all species in FMZ 571 as amount as 425.444 tons in 2016.

MALAYSIA:

Population from Tumpat, was genetically close to the mackerel from Pattani according to the close geographical distance between the sampling localities (2018).

PHILIPPINES:

The Indo-pacific mackerel registered a total production of 31.17 thousand metric tons in 2018. It was 12.25 percent short of its 2017 performance of 35.52 thousand metric tons.

TABLE 2 Volume of Fisheries Production by Species: Philippines, 2016 - 2018

Species	Volume of Production (metric tons)			Percent Change		% Point
	2016	2017	2018	2017/2016	2018/2017	Contribution
Fisheries	4,355,792.42	4,312,089.51	4,351,892.60	(1.00)	0.92	0.92
Milkfish	402,655.07	416,363.17	400,118.78	3.40	(3.90)	(0.38)
Tilapia	300,722.50	310,974.80	321,076.58	3.41	3.25	0.23
Tiger prawn	49,254.50	46,157.00	44,884.45	(6.29)	(2.76)	(0.03)
Roundscad (Galunggong)	211,776.50	183,077.67	168,148.04	(13.55)	(8.15)	(0.35)
Skipjack (Gulyasan)	220,108.99	247,593.66	258,316.72	12.49	4.33	0.25
Yellowfin tuna (Tambakol/Bariles)	103,037.15	106,920.07	94,183.45	3.77	(11.91)	(0.29)
Seaweed	1,404,519.23	1,415,320.79	1,478,300.85	0.77	4.45	1.46
Frigate tuna (Tulingan)	133,886.39	122,074.67	111,755.82	(8.82)	(8.45)	(0.24)
Indian sardines (Tamban)	280,472.75	241,477.37	257,634.84	(13.90)	6.69	0.37
Big-eyed scad (Matangbaka)	112,826.16	109,203.03	110,724.31	(3.21)	1.39	0.04
Indian mackerel (Alumahan)	63,320.00	60,071.23	55,705.17	(5.13)	(7.27)	(0.10)
Squid (Pusit)	52,118.54	49,898.73	47,031.16	(4.26)	(5.75)	(0.07)
Mudcrab	17,845.72	18,997.85	21,678.67	6.46	14.11	0.06
Threadfin bream (Bisugo)	39,682.28	39,598.35	36,507.14	(0.21)	(7.81)	(0.07)
Fimbriated sardines (Tunsoy)	76,585.73	79,421.79	88,270.48	3.70	11.14	0.20
Anchovies (Dilis)	55,760.61	50,174.37	48,734.48	(10.02)	(2.87)	(0.03)
Indo-pacific mackerel (Hasa-hasa)	38,338.79	35,518.34	31,167.97	(7.36)	(12.25)	(0.10)
Blue crab (Alimasag)	28,616.74	31,327.61	33,963.01	9.47	8.41	0.06
Eastern little tuna (Bonito)	36,918.06	37,090.00	36,562.73	0.47	(1.42)	(0.01)
Grouper (Lapu-lapu)	17,881.70	17,482.65	17,798.63	(2.23)	1.81	0.01

Reference: Fisheries Situation Report January to December 2018 ISSN 2012-0400

THAILAND:

- o 2016 > MSY =96,455 Tonnes at fishing effort 78,680 days
- o Actual fishing status point =24,328 Tonnes at fishing effort 237,679 days
- o Fishing effort over = 66.90%
- o 2017 > MSY =123,515 Tonnes at fishing effort 58,906 days
- o Actual fishing status point =12,310 Tonnes at fishing effort 208,079 days
- o Fishing effort over = 71.74%

VIET NAM:

In the south western of Viet Nam, the length at first maturity for female, *R. brachysoma* was 152,3 mm while for male was 163,2 mm. Normal length ranged from 160mm - 200mm. Sex ratio between male and female in stock is 1:1.4

IV. FISHERIES STATUS

CAMBODIA:

In Cambodia, the catch of mackerels had increased from 1,000 ton to 4650 ton from 1990 to 2006. In Sihanouk Province of Cambodia, there are two high catch peaks, i.e. first one in January and February; and second peak in July, September, and October. The Indo Pacific Mackerel catch composition was 86% of the total pelagic catch based on data in 2003-2004. In Kampot Province, the high peak catch is in May, June, July and September. The catch composition was 63% of the total pelagic catch in 2004. Mackerel is not only sold on the domestic market but is also exported to neighboring country both fresh and processed.

INDONESIA:

Suwarso et al, 2010 reported that small pelagic fish is a dominant catch fish species in South China Sea (in between Riau Archipelagoes waters and Kalimantan) with a vital decreasing rate of catch per years. Suwarso et al, 2015, BAWAL journal Vol. 7, reported that there is a shift of changing in catching areas due to decreased catch volume per years in Northern Java Sea, Indonesia. Most of the FMZs in Indonesia are in fully exploited and over-exploited status on small pelagic catch. The most critical condition is on FMZ 571 (Malacca Strait and Andaman Sea)

MALAYSIA:

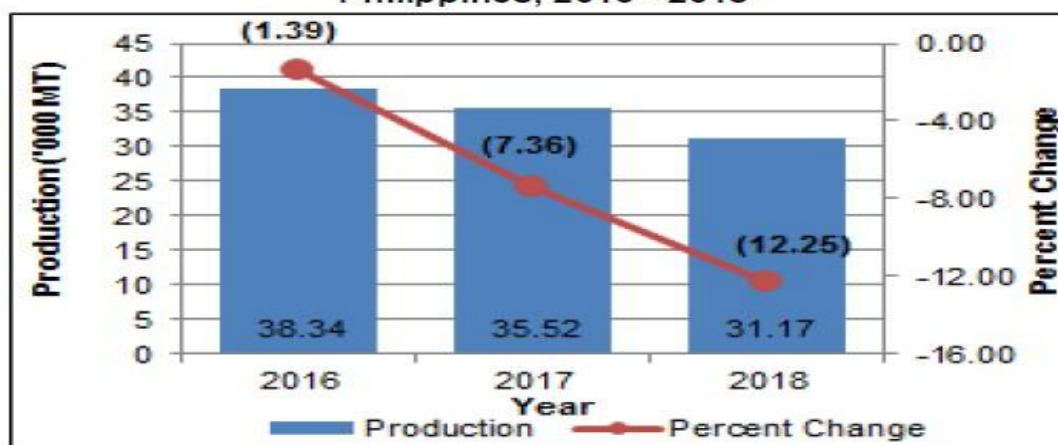
- o During 2009-2015, the highest quantities of mackerel were recorded in Zone A in Kelantan and Pahang, and Zone B in Terengganu and East Johor (2016).
- o small pelagic species in the east coast of Peninsular Malaysian waters are still under-exploited and sustainable which includes the Indo-Pacific mackerel (2016)
- o Stable for Sustainable harvest level in the east coast of Peninsular Malaysian waters.
- o The main gears used are gill nets/drift nets and purse seines and their catch is landed in the States of Kelantan, Terengganu, Pahang, and East Johor. During 2009-2015, the highest quantities of mackerel were recorded in Zone A in Kelantan and Pahang, and Zone B in Terengganu and East Johor.

State	Total Catch (MT)	Average MT/Y	Gear types (%of catch)	% of species catch according to fishing zone for 7 years (2009-2015) A (0-5 nm), B (5-12 nm), C (12-30 nm) and C2 (>30 nm)
Kelantan	941.87	134.55	Gill/drift net (7.3%) Trawler (25%) Handline (2%)	A= 74.70 B=6.62 C= 10.81 C2=7.87
Teranganu	262.15	37.45	Purse seine (44%) Trawler (36%) Gill/drift net(18%) Handline (2%)	A= 20.55 B=71.51 C= 3.37 C2=4.57
Pahang	4336.03	619.43	Gill/drift net(90%) Trawler (6%) Purse seine (3%) Others (1%)	A= 90.79 B=2.99 C= 2.13 C2=4.09
East Johor	114.99	16.41	Trawler (78%) Gill/drift net(21%) Purse seine (1%)	A= 20.67 B=44.89 C= 33.86 C2=0.58

PHILIPPINES:

Volume of catch continuously went down for the past three years. From a 7.36 percent drop in 2017, a higher decrease of 12.25 percent was observed in 2018. Of the total catch in 2018, 65.85 percent were unloaded in municipal fish landing centers and the rest in commercial fish landing centers. The volume of catch of indo-pacific mackerel was almost equally distributed quarterly. However, the volume was relatively higher during second and fourth quarters which represented 27.20 and 26.53 percent of the total output in 2018, respectively. Drop in production was observed in all quarters of 2018. Double digit increments of 13.51 and 17.29 percent during the second and third quarters sealed the low output in 2018, respectively.

FIGURE 21 Volume of Indo-pacific Mackerel Production Philippines, 2016 - 2018



Reference: Fisheries Situation Report January to December 2018 ISSN 2012-0400

THAILAND:

3 Main fishing gears: Purse seine 75%, Indo Pacific Mackerel encircling gill net 19 %, Indo Pacific Mackerel gill net 3%, and Other < 1%. Total catch of Indo Pacific Mackerel is decreasing trend during 2015 – 2018.

VIET NAM:

In the southwest monsoon (from May to October), the total biomass estimated at 264 thousand tons, and the total allowable catch (TAC) 106 thousand tons (Nghiaet *al.*, 2007. RIMF). In addition, In the northeast monsoon (from November to April the following year), the mackerel species biomass about 169 thousand tons and TAC: 87 thousand tons (Nghiaet *al.*, 2007. RIMF).

V. MAPPING AND HABITAT LINKAGES, SPAWNING, NURSERY GROUNDS

CAMBODIA:

- o The major fishing areas of mackerel in Cambodia including Koh Rong, Koh Thas, Koh Roeusey, Koh Takiev, Koh Thmey, Koh Ses and other small islands archipelago and in Kampong Som bay inshore and offshore such as Koh Rong Sanlem, Koh Tang, Koh Pring and Koh Poulowai archipelagoes. During rainy season, this species is caught in inshore area such as near Koh Daekol, Koh Pours, Koh Thas, in front of Thmorsor and Stoeung Hav areas in Preah Sihanouk province by trawlers and caught by gillnets, push nets and small trawlers which operating near shore in Kampot and Kep provinces.
- o Cambodia's offshore waters are considered as important spawning and nursing grounds for regional stocks of Indo Pacific mackerel. The spawning of this species may occur throughout the year with peaks of spawning from February to May. Males were slightly more abundant than females. The processors of steamed mackerel fish in Preah Sihanouk province observe that during Jan-Apr the steamed fish always break its belly because egg is bigger and this period is not good for this processing.

INDONESIA:

- o The distribution of the species in Indonesia is largely concentrated in coastal waters of Kalimantan, West Sumatra, Java Sea, Malacca Strait, South-east Sulawesi (District Muna - Buton) and Arafura Sea (dunia-perairan.com).
- o Based on Suwarso et al, 2015, Jurnal Kebijakan Perikanan Indonesia, the spawning season for the species is estimated on October to November in Northern Java Sea.
- o Jannati et al, 2016, <https://repository.ipb.ac.id/handle/123456789/86212> mentioned that spawning season of the species in Sunda Strait is estimated on April as a start, and August as the peak.

MALAYSIA:

Require the element for resource mapping for management; comprising for spawning ground, nursing ground and fishing ground and identification of egg and larvae hotspots.

PHILIPPINES:

- o Known Critical Spawning and Nursery Areas for Significant Fish Species in the Philippines: Short mackerel (*Rastrelliger brachysoma*)
 1. Lingayen Gulf 16°12'42'' – 120°08'17''
 2. Batangas Coast 13°39'N – 120°44'E
- o Species of transboundary significance and their recorded occurrences in waters of the South China Sea side of the Philippines: Short mackerel (*Rastrelliger brachysoma*)*
 1. Bauang,
 2. La Union;
 3. Manila Bay;
 4. Calapan, Mindoro

*Reference: Barut, Noel. NATIONAL REPORT on The Fish Stocks and Habitats of Regional, Global, and Transboundary Significance in the South China Sea PHILIPPINES. National Fisheries Research and Development Institute. Department of Agriculture. 940 Kayumanggi Press Building, Quezon Avenue, Quezon City 1103, Philippines

- o Key spawning areas (ichthyoplankton) in South China Sea** are:
 - (a) Malampaya Sound;
 - (b). the western portion of Lingayen Gulf;
 - (c). Mindoro Strait; and
 - (d). Northern Palawan including the Calamianes Islands.

It is also believed that Scarborough Shoal and the Kalayaan Island Group are major sources of propagules for the country’s archipelagic waters and fishing grounds, although comparable information (e.g.ichthyoplankton) for use in undertaking a more definitive examination are lacking.

**Reference: <https://fisheries-refugia.org/philippines-background/93-refugia-country-activities/philippines/background-philippines/161-known-areas-philippines>

- o Locations on the South China Sea Coast of the Philippines that important pelagic species utilize for spawning (compiled by Mr. Noel Barut, Fisheries Focal Point for the Philippines)

Country	Geographical Location	Important Pelagic Species that Utilise the Area for Spawning	Fishing Gears and Practices Used in the Area	Existing Fisheries Management Measures in the Area
Philippines	Busuanga, Coron, Culion and Tayaty Palawan; along South China Sea	Sharks, rays, garfish, hemiramphus, mackerels, scads, belonidae, salmon, fusiliers, sardines, milkfish, garfish, herrings, penaeid shrimps, rabbitfish, mullet, anchovies, carangidae families, scombroids; hawksbill & green sea turtle; bottlenose & irrawady dolphin, sea cow		Marine reserve Marine park
Philippines	Mabini and San Juan, Batangas; South China Sea	Anchovy, jacks, mackerels, tunas, dogtooth and yellowfin tuna, rays, remora, sailfish, flying fish, halfbeak, herring, sardines, salmon, golden trevally, barracuda, fusiliers		Marine reserve Marine park
Philippines	Bolinao and Anda, Pangasinan; along South China Sea	Anchovies, herrings, sardines, salmon, tuna, rays, sharks, sailfish, fusiliers, barracuda		Marine reserve Marine park

THAILAND:

- o The populations are genetically different to each other in moderate level.
- o Mixed Stock Analysis (MSA) , Samut Songkhram 42.81%, Trat 34.38%, Surat Thani 21.60%, Prachuap Khiri Khan 1.21%
- o The life cycle; Distribution - along the coastal, less than 50 m. depth. Spawning season – all year and Spawning grounds – the middle of the GoT (off Prachuap Kiri Khan, Chumphon and SuratThani provinces.
- o Gravid fish move from the inner Gulf to spawn in the middle Gulf.
- o Fertilized eggs float in areas of 20-30 m. in depth.
- o Juveniles move to the inner Gulf.

VIET NAM:

- o XXXX

VI. EXISTING LEGAL/MANAGEMENT MEASURES

CAMBODIA:

- o Mackerels catching is banned from 15 January to 31 March of each year according to Fisheries Law of Cambodia

INDONESIA:

- o Law No. 31 Year 2004 on Fisheries, a law in governing the fisheries sector within its all aspects.
- o Marine Affairs and Fisheries Ministerial Regulation No. 18 Year 2014 for Fisheries Management Zone governs the management of the fisheries zone in Indonesia.
- o Marine Affairs and Fisheries Ministerial Decree No. 50 Year 2017 for allowable catch and rate of utilization to all commercially recognized species (not specifically mentioned the species – *Rastrelliger brachysoma*).
- o Trade Ministerial Regulation No. 66 Year 2018 on Fisheries Import Requirements governs the arrangement on importing fish and its product (not specifically mentioned the species).
- o No specific regulation under Ministerial decree or regulation on the species.

MALAYSIA:

- o Prohibiting the use of some commercial gears during the closed season and protecting the nursery ground by enforcement.
- o While management measures are in place for local mackerel stock, there is none for the transboundary stocks as much information is still needed to confirm.

PHILIPPINES:

- o DA-DILG JAO Order No. 2, s. 2014 - Establishing a closed season for the conservation of small pelagic in Davao Gulf.
- o FAO No. 167 – Establishing of closed season for the conservation of sardines, herrings and mackerels in the Visayan Sea.
- o Reference: <https://www.bfar.da.gov.ph/LAW>

THAILAND:

- o Closed season
- o Closed area
- o During 15Feb-15May to conserve gravid fish and juveniles in the Gulf of Thailand.
- o Control Fishing licenses, Fishing zone, and Gear restriction

VIET NAM:

- o Indo-Pacific mackerel together with continued links to existing cooperation transboundary species among Gulf of Thailand countries.
- o Existing data/information in support of improved understanding of stock status as well as to provide the basis for appropriate fisheries management measures (focus on fishing effort regulation).
- o Fisheries Laws (2003)
- o Strategy and Master Plan for Sustainable Fisheries Development to 2020 approved by the Government (2013).
- o NPOA of IUU and Fishing Capacity Management are being drafted.
- o Viet Nam became a Cooperating Non-Member of WCPFC since 2009 and thus legal and policy arrangements have also being reviewed in the light of WCPFC's requirements.

- o UNCLOS ratified by Vietnamese Government in 1994 is used as basis for fisheries management arrangements.
- o Member of RPOA

**PLENARY DISCUSSION ON THE FINALIZATION OF THE DRAFT RAP OF
THE GULF OF THAILAND SUB-REGIONAL ACTION PLAN FOR FISHERIES
MANAGEMENT OF INDO-PACIFIC MACKEREL**

By *Dr.Somboon Siriraksophon*

**Final Draft of
the Regional Action Plan for Management of *Rastrelliger brachysoma* in Gulf of Thailand
Sub-region
as of 13 September 2019**

GOAL (proposed)

1. Sustainable Indo-Pacific mackerel fisheries in the Gulf of Thailand sub-region through holistic management approach by 2030

OUTCOME

1. Sustainability of short mackerel resources through the implementation of fishery management plan
2. Accurate and comprehensive information for short mackerel make available and use for management responses
3. Well-being of people engaged in short mackerel fishery sustained
4. The template for the development of management plan for short mackerel applicable for other small pelagic species

1. GOVERNANCE DIMENSION	Overall Objective: Regional/sub regional fisheries management mechanism are in place building upon from national regulation and management scheme Specific Objectives 1) Fisheries Management Mechanism developed and approved (including fisheries management plan and arrangement, the effective of regulation) 2) Data management system are enhanced and considered regional/sub-regional standardization data management system in place 3) Standard for assessing fishing effort large, medium and small-scale fishery agreed 4) Understandings on national law and management schemes within the sub-regional are communicated and applied 5) Impact of unregulated and unreported fishing assessed 6) Catch documentation system applied as a tool to improve traceability of the short mackerel fishery		
Knowledge Gaps/Issues	Actions	Sp.Obj	Responsibility
Insufficient catch and landing data	Develop the SOP/technical guidance for data collection (including catch data, biological data)	2	SEAFDEC University Government agency Fishery research institute
	To further develop catch documentation	2	
	Harmonization/standardized on data collection and develop database system	2	
Insufficient biological data collection	Conduct capacity building program for data collection to enumerator and scientist, researchers	3	SEAFDEC University Government agency Fishery research institute
	Conduct time series data collection with standardized method	3	
Fishing effort (include commercial and small scale)	Link to the catch documentation include commercial and small-scale fishery (as available)	4	Government and Private sector
	Regular monitor data collection on fishing effort capture production (include commercial and small scale)	4	
Fisheries Management Mechanism (including fisheries management plan and arrangement, the effective of regulation)	Develop fisheries management plan for short mackerel at national and sub-regional level	1	SEAFDEC University Government agency Fishery research institute All stakeholder (fishers, others)
	Establish regional cooperation on monitoring, control and surveillance	1	
	Raise awareness of both small-scale fishers and commercial-scale fishers <ul style="list-style-type: none"> o Policy and regulations o Management measures o Sustainable utilization o Involvement the participation, considering gender sensitivity 	1	
	Promote stakeholder consultation among researchers, managers and stakeholders using EAFM	1	
	Conduct habitat rehabilitation and stock enhancement programs	1	
Understanding national law and regulations	Comparative review of national law and regulations	5	Government and resource person Other stakeholders
	Disseminate knowledge and information on the conservation and management of Indo-pacific mackerel to fisheries communities and students	5	
Flexibility of regulation to respond to science advise	Encourage periodic evaluation of policy and regulation	1	Government
Management schemes/arrangements including transboundary aspects.	Develop management schemes/arrangements at sub-regional area including transboundary aspects	1	SEAFDEC University Government agency Fishery research institute All stakeholder
	Support establishment of regional cooperation/management mechanism (non-legal binding and scientific advisory committee)	1	
Illegal, Unregulated and Unreported Fishing	Assessing the impact of Illegal, Unregulated and Unreported Fishing	6	Government and resource person Inter-agencies coordination
	Strengthen the Monitoring, Control and Surveillance network against the illegal fishing (none legal binding)	6	
Traceability system for fish and fishery product (using electronic logbook, etc)	Develop the catch documentation that suitable for traceability system e.g. electronic logbook, etc	7	Government and resource person

2. SOCIAL DIMENSION Overall Objective: social responsibility and involvement in fisheries management achieved Specific Objectives 1) Understanding the social condition of people involving in fishery at local and national level. 2) Increase participation and involvement of stakeholder in various level. 3) Resolve conflict on land and resource use 4) Build awareness and capacity in all level			
Knowledge Gaps/Issues	Actions	Sp.Obj	Responsibility
Social and economic at local and national level	Conduct a baseline survey based on available information on social and economic at local and national level (S)	1	Government University
Traditional fishing (indigenous knowledge and social responsibility)	Improve and disseminate the best practice to other (indigenous people)	1	Government
People engagement in fishery activity (include small scale fishery and large scale/commercial fishery, processing)	Conduct stakeholder analysis for understanding the important and influence of stakeholder in various level	2	Government University
People engagement in policy making (fisherfolk organization, academy, private sector,	Promote Public Private Partnership	2	Government
	Promote multi stakeholder engagement in policy making	2	Government and relevant stakeholder
Social structure (community small scale and large scale, gender, migrant labor, and fisher)	Encourage gender equality based on understanding of social structure in community	2	Government and relevant stakeholder
Conflict on land and resource use	Promote stakeholder consultation	3	Government and relevant stakeholder
	Promote marine spatial planning and coastal zone management	3	Government Resource person Relevant stakeholder
Awareness	Distribute brochures or any media (e.g. digital media) to promote fisheries management and regulations	4	SEAFDEC Government Relevant stakeholder
	Capacity building and experts exchange	4	
	Fishing gear technology for eco-friendly (Reduce bycatch, cost and expenditures)	4	

3. ECONOMIC DIMENSION Overall Objective: equal distribution of economic benefit, economic return and employment opportunities Specific Objectives: 1) Ensure the national government and private sector commitment for long-term funding and support. 2) Understanding the structure and ownership of asset within fishing industry (large, medium and small scale). 3) Maximized economic benefit return for management response and reduced unequal distribution.			
Knowledge Gaps/Issues	Actions	Sp.Obj	Responsibility
Funding	To ensure the national government commitment for long-term funding and support	1	Government Private sector Funding agency/donor
	Explore various potential donor	1	
	Promote capital access through micro finance scheme	1	
	Promote corporate social responsibility	1	
Structure and ownership of asset within the fishing industry (large and small scale)	Review structure and ownership of asset within the fishing industry (large, medium and small scale) for management responses	2	Government Resource person
Benefit and economic return and unequal distribution	Assess benefit and economic return throughout the value chain	3	Government Resource person
Increase of cost (fuel and other inputs)	To ensure the fuel and other input exist for local fishermen	3	Government


Fisheries employment revenue	To create the alternative work	3	Government
	Require the contract among people engage in fishing	3	Private Sector Relevant stakeholder

4. ECOSYSTEM DIMENSION			
Overall Objective Maintain healthy ecosystem for the wellbeing of short mackerel resources			
Objectives			
1) Understand current status and improve the knowledge of short mackerel resources for scientific based management			
2) Understand various habitats of short mackerel throughout its life cycle			
Knowledge Gaps/Issues	Actions	Sp.Obj	Responsibility
1.1 Migratory route	Update, further define and confirm the migratory route at national, sub-regional or regional area	2	Fisheries Agencies, National Research Institutions, Regional Institutions
	Conduct tagging program, e-DNA, DNA	1	Fisheries Agencies, Research Institutions
1.2 Spawning and nursery grounds (including dispersion and distribution of fish larvae)	Conduct comprehensive larvae survey (e.gichthyoplankton)	1	Fisheries Agencies, Research Institutions
	Study on critical habitats	2	Fisheries Agencies, Research Institutions,
1.3 Seasonal changes	Conduct comprehensive larvae survey (e.gichthyoplankton)	1	Fisheries Agencies, Research Institutions, SEAFDEC
	Conduct reproductive biology study	1	Fisheries Agencies, Research Institutions, SEAFDEC
1.4 Physical and chemical oceanographic conditions and ocean circulation	Conduct oceanography survey	2	Fisheries Agencies, Research Institutions, SEAFDEC
	Develop oceanographic modelling	2	Fisheries Agencies, Research Institutions, IOC/WESTPAC
	Conduct satellite imagery (GIS, remote sensing) analysis	2	Fisheries Agencies, Research Institutions
1.5 Stock structure	Conduct DNA study, otolith, tagging, etc.	1	Fisheries Agencies, Research Institutions, SEAFDEC
1.6 Stock status at national and regional of <i>R. brachysoma</i> (distribution and abundance)	Conduct stock assessment at national, sub-regional or regional level	1	Fisheries Agencies, Research Institutions, SEAFDEC
	Share data, information and findings from scientific research to relevant stakeholders	1	Fisheries Agencies, Research Institutions, SEAFDEC
	Standardized data collection for regional stock assessment	1	Fisheries Agencies, Research Institutions, SEAFDEC
	Develop modeling for stock assessment	1	Fisheries Agencies, Research Institutions, SEAFDEC, FAO
1.7 Species Identification	Provide capacity building on species identification of small size (juvenile) and larval fishes	1	Fisheries Agencies, Research Institutions, SEAFDEC
1.8 Status and Trends	Investigate the trend of short mackerel catch at national, sub-regional levels	1	Fisheries Agencies, Research Institutions, SEAFDEC
1.9 Population dynamics (Growth parameters, mortalities etc.	Conduct survey on fisheries biology	1	Fisheries Agencies, Research Institutions
1.10 Impact of fishing effort on stock structure (Multi-fishing gears to harvest)	Conduct study on impact of fishing effort on stock structure (Multi-fishing gears to harvest) to improve the fishery management	1	Fisheries Agencies, Research Institutions, SEAFDEC
	Enhance Fishing gear technology for eco-friendly (Reduce bycatch, cost and expenditures)	2	Fisheries Agencies, Research Institutions, SEAFDEC

1.11 Stock assessment and distributions for transboundary species	Enhance the cooperation for information sharing among the bordering countries	1	Fisheries Agencies, SEAFDEC
1.12 Capacity building and experts exchange	Training, workshop, conference and experts exchange	1,2	Fisheries Agencies, Research Institutions, SEAFDEC, FAO, UNEP-GEF

5. CLIMATE CHANGE	Overall objective: Adaptive management based on an understanding of the impact of climate change and disaster		
	Objectives: 1) adaptive management measures in place in response to the impact of climate change and disaster to short mackerel fisheries and habitats 2) mitigation and precautionary measures adopted to compensate for the effects of climate change		
Knowledge Gaps/Issues	Actions	Sp.Obj	Responsibility
5.1 IMPACT of climate change to fish migration route	Assess the impact of climate change/disaster/anthropogenic activities to fish migration route, habitat and behavior	1	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
	Study effect of environmental changes on the migratory pattern and spawning patterns based on climate change	1	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
	Share information from the findings of scientific research to both fisheries managers and fishers	2	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
5.2 Sensitivity of species on critical habitats and environment impact to ecosystem (pollution, climate change, etc)	Conduct study on sensitivity of species on environment change (pollution, climate change, etc) to support the management response	1	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
	Study on the critical habitats (spawning and grounds)	1	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
	Study effect of environmental changes on the migratory pattern and spawning patterns	1	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
	Data sharing (assign focal person to share information)	1	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO
5.3 Capacity building and experts exchange	Training, workshop, conference and experts exchange on CC impacts	1,2	Fisheries and Environmental Agencies, Research Institutions, SEAFDEC, UNEP-GEF, UNDP, FAO


CONCLUSION AND WAYS FORWARD



ROADMAP
Development of the Regional Action Plan for Sustainable Management of Indo-pacific mackerel

Presented by :
 SOMBOON SIRIRAKSOPHON

TCM-RAP AGENDA 7 1



Technical Consultative Meeting on Drafting of the Regional Action Plan for Management of Transboundary Species Indo-Pacific Mackerel in the Gulf of Thailand Sub-region, 12-13 September 2019, Chonburi, Thailand

ROAD MAP

- LITERATURE REVIEW OF SEAFDEC-SWEDEN ACT & OTHERS
- TECHNICAL CONSULTATIVE MEETING for Drafting of Regional Action Plan for Short Mackerel
- PREPARE a full policy paper on RAP-Short Mackerel
- ADDRESS the RAP-Short Mackerel to PCM and FCG/ASSP for consideration
- ADDRESS THE RAP-SHORT MACKEREL to COUNCIL and ASWGFI for approval and endorse, respectively

Timeline

JAN-SEP'19

12-13 SEP'19

SEP-NOV'19

NOV-DEC'19

MAR-MAY'20

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